Table 1 Prevalence of hepatitis B, hepatitis C, HIV-1, and syphilis among groups

Group	No	Hepatitis B surface antigen (%)	Hepatitis C antibody (%)	HIV-1 ELISA (%)	Syphilis†
STI	374	86 (23)	36 (9.6)	3 (0.8)*	6 (1.6)
CSW	72	8 (11)	7 (9.7)	0 (0)	3 (4.2)
Traders	76	18 (23.7)	4 (5.2)	0 (0)	0 (0)
Homeless	71	16 (22.5)	15 (21.13)	0 (0)	2 (2.8)
Total	593	128 (21.6)	62 (10.5)	3 (0.5)	11 (1.9)

*Repetitively reactive to HIV-1 ELISA but negative to western blot.
†All samples were RPR and FTA-ABS reactive; 10 subjects had RPR titres of ⩽1:4.

health is eager to perform surveillance for STIs, including viral hepatitis, resources for collection, storage, and testing of specimens are meagre. We evaluated the utility of a filter paper blood collection technique for determining rates of HIV, syphilis, and viral hepatitis B and C in this resource limited setting.[3–6]

The study was approved by the institutional review boards at the University of Alabama at Birmingham and the Mongolian ministry of health. Volunteers including commercial sex workers, itinerant traders, homeless people, and attendees at the STI clinic were sampled in Ulaanbaatar, Mongolia. All subjects completed a questionnaire and provided blood via a finger stick.

Blood was collected as filter paper spots using Schleicher and Schuell (Keene, NH, USA) no 903 filter paper following the National Committee for Clinical Laboratory Standards protocol. Samples were dried, stored at room temperature for the duration of the 2 week visit to Mongolia, and then refrigerated upon arrival to the testing laboratory. For every blood spot, a ¼ inch disc containing about 5 µl of serum was punched out of the filter paper. Disc samples were eluted in 400 µl of phosphate buffered saline for samples to be tested for HBsAg and HCVAb, 200 µl of specimen diluent solution for samples to be tested for HIV, or 500 µl of 0.9% saline solution for rapid plasmin reagin (RPR) and FTA-ABS tests.

A total of 593 volunteers were enrolled. The prevalence of infection using the filter paper technique was 1.9% for syphilis, 10.5% for hepatitis C, and 21.6% for chronic hepatitis B. The prevalence of hepatitis C was higher among homeless people compared to other risk groups (21.13% *v* 5.2–9.7%) (table 1). For 128 volunteers with chronic hepatitis B, 86 of them (67.2%) occurred in STI clinics attendees. Eleven individuals had reactive tests for syphilis. Three individuals had repetitively reactive ELISAs for HIV, however, none was confirmed by western blot. A total of 232 volunteers (39.1%) reported use of condoms routinely, 55/593 (9.27%) had a history of blood transfusion, and 9/593 (1.5%) reported use of injecting drugs. Neither condom use, number of sexual partners, nor a history of blood transfusion were predictors of hepatitis B infection. No correlations were found between the prevalence of hepatitis C virus infection and the use of drugs or history of blood transfusions.

We found the filter paper technique for blood collection to be a reliable and useful method for serological studies in resource poor areas where blood collection and/or specimen transport may be difficult. Specimens were easily collected, stored, and transported before testing. Rates of viral hepatitis were high but rates of syphilis and HIV unexpectedly low. Future prevalence testing using this method will be able to determine trends of these communicable diseases in Mongolia.

Acknowledgements

This project was funded through the World AIDS Foundation (WAF No 175 98–054). This work was presented in part at the 40th Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC Meeting) in Toronto, Ontario, September 2000.

Contributors

IT helped design the project, organised and participated in specimen collection, performed data entry and analysis, and drafted the manuscript; MA organised and facilitated the study in Mongolia and reviewed the manuscript; SV helped design the project, reviewed data analysis and manuscript prepartion; JWG processed laboratory specimens for HIV testing and mentored IT in same, reviewed manuscript; EHH processed laboratory specimens for syphilis testing and mentored IT in same, reviewed manuscript; JS helped design project, was the principal mentor for IT for all aspects of the project, and assisted in writing the manuscript.

I Tellez*
Division of Infectious Diseases, Department of Medicine, University of Alabama at Birmingham, Birmingham, AL, USA

M Altankhuu
The Public Health Institute, Ulanbataar, Mongolia

S Vermund
Division of Geographical Medicine, Department of Medicine, University of Alabama at Birmingham, Birmingham, AL, USA

J W Gnann, E H Hook, J Schwebke
Division of Infectious Diseases, Department of Medicine, University of Alabama at Birmingham, Birmingham, AL, USA

Correspondence to: Dr Jane Schwebke, University of Alabama at Birmingham, 703 19th St South, Zeigler Research Building #239, Birmingham, AL 35294-0007, USA; schwebke@uab.edu

*Current address: Hospital Angeles Lomas, Vialidad de la Barranca s/n, Consultorio # 430, Col Valle de las Palmas, CP 52763 Huixquilucan, Edo de Mexico

References

1 **Purevdawa E**, Moon TD, Baigalmaa C, *et al.* Rise in sexually transmitted diseases during democratization and economic crisis in Mongolia. *Int J STD AIDS* 1997;**8**:398–401.
2 **Fujioka S**, Shimomura H, Ishii Y, *et al.* Prevalence of hepatitis B and C virus markers in outpatients of Mongolian general hospitals. *J Jap Assoc Infect Dis* 1998;**72**:5–11.
3 **Bond WW**, Petersen NJ, Favero MS, *et al.* Evaluation of a finger prick blood collection method for the seroepidemiology of hepatitis B. *Bull World Health Organ* 1978;**56**:791–6.
4 **Parker SP**, Cubitt WD, Ades AE. A method for detection and confirmation of antibodies to hepatitis C virus in dried blood spots. *J Virol Meth* 1997;**68**:199–205.
5 **Panteleeff DD**, John G, Nduati R, *et al.* Rapid method for screening dried blood samples on filter paper for human immunodeficiency virus type 1 DNA. *J Clin Microbiol* 1999;**37**:350–3.
6 **Stevens R**, Pass K, Fuller S, *et al.* Blood spot screening and confirmatory tests for syphilis antibody. *J Clin Microbiol* 1992;**30**:2353–8.

Accepted for publication 7 March 2002

Congenital syphilis—missed opportunities for prenatal intervention

The changes in political, economic, and social life in the eastern European countries—that is, greater group mobility, substanial rise in travel activity, changes of the sexual behaviour are all related to the increased syphilis morbidity.[1 2] There has been a sevenfold increase in the syphilis morbidity in Bulgaria in 1999 compared with 1990—that is, 2628 *v* 378 diagnosed cases respectively,[3] in 2000 there were 1605 cases. An increased number of syphilis patients among adults, and especially among pregnant women, reflected the growing incidence of congenital syphilis. The incidence of congenital syphilis in Bulgaria increased from one case in 1990 to 31 in 2000. This is observed as one of the most alarming trends in morbidity.

We report four infants with congenital syphilis—a 20 day old male infant, two male newborns, and a 2 month old female. The children were in quite a bad condition. They presented with disseminated maculous (case 4), erythemosquamous and haemorrhagic (case 1), bullous and papulosquamous lesions, and prematurity (cases 2 and 3), rhinitis, jaundice, oedema of the lids and abdomen (case 1, 2, and 3), and hepatosplenomegaly. Case 2 had asphyxia perinatalis, bradypnoea, bradycardia, atelectases pulmonum, hypothermia, respiratory acidosis with hypoxaemia, and neurological symptoms. Osteochondritis of the long bones on *x* ray was found in cases 1, 2, and 3. Patient 4 had pseudoparalysis Parrot (the roentgenogram of the upper right extremity showed typical changes in the distal metaphysis of the humerus and the proximal metaphysis of the radius). Severe anaemia, leucocytosis, thrombocytopenia, elevated erythrocyte sedimentation rate, hypoproteinaemia, hypoalbuminaemia, hyperbilirubinaemia, elevated ASAT, ALAT, and LDH were noted in cases 1, 2, 3. The TFS of patient 1 revealed features of vasculitis. The serological blood tests (VDRL, TPHA, IgM-FTA ABS, IgG-FTA ABS) were positive, but CSF tests were negative. The children were treated with penicillin successfully. The mothers of the children had positive syphilis serology; they have not been treated for syphilis.

Congenital syphilis is a serious disease, whose clinical spectrum ranges from asymptomatic infection to fulminate sepsis or death.[4] But many cases could be prevented with early and adequate prenatal care. Pregnant mothers have to be examined routinely twice during pregnancy in the first and early third trimester as well as immediately after delivery (umbilical blood sample). Unfortunately, these rules are often not followed. The reduced or absent serological screening in pregnant mothers (as in our cases) is common. The mothers of cases 1 and 3 have not been tested at delivery. A general Lues serodiagnostic test is recommended in all newborns before they leave the obstetric departments.

Some authors found that the longest delay was the time at the laboratory[5] as in case 1. (The mother was negative in the first trimester of pregnancy, became positive in the late third trimester, but the results came too late—after delivery.) Improved laboratory services will solve this problem.

Patients have often been treated by non-venereologists without contact tracing, like the father of case 1, and his diagnosis and therapy were not adequate. With regard to confidentiality patients often receive non-professional treatment or undergo self treatment.

Unfortunately, the difficulty in dealing with patients having a poor educational background and insufficient sexual knowledge results in the impossibility to find all the sources of infection. The parents of patient 2 did not seek medical help, although the father had penis lesion. The mother did not visit a doctor after she was pregnant. Even her labour was at home, as it was in the mother of case 4.

Another big problem is prostitution, which is not legal and cannot be controlled in our country.[6] The mothers of patients 3 and 4 were prostitutes, who did not seek medical assistance at all.

More than half of our patients are unable to indicate the name or address of the contacts (the father of case 1 and the mothers of cases 2, 3, 4), thus demonstrating the high frequency of occasional sexual contacts and the lack of protective measures.

The government health system has existed in Bulgaria for more than 50 years but social and economic changes require a new insurance system and new approaches concerning STDs. The system for notification of STD patients should be improved in order to ensure a higher confidentiality. The reported cases also emphasise the necessity of cooperation between dermatologists, obstetricians, neonatologists, and paediatricians.

Krasimira Chudomirova
Clinic of Dermatology and Venereology, Higher Medical Institute-Plovdiv, Bulgaria

Elena Mihajlova, Ivan Ivanov
Clinic of Pediatrics

Stefan Lasarov, Penka Stefanova
Clinic of Pediatric Surgery

Correspondence to: Krasimira Chudomirova, MD, PhD, Clinic of Dermatology and Venereology, 1, Gen Stoletov Str, 4002 Plovdiv, Bulgaria; ivan@rakursy.com

References

1 **Renton AM**, Borisenko KK, Meheus A, *et al*. Epidemics of syphilis in the newly independent states of the former Soviet Union (editorial). *Sex Transm Infect* 1998;**74**:165–6.
2 **Diaconu JD**, Benea V, Muresian D. Incidence of sexually transmitted diseases in Romania in the transition period. *JEADV* 1999;**12** (suppl 2):342.
3 **Dentcheva R**, Spirov G, Gilina K, *et al*. Syphilis in Bulgaria—epidemilogical survey 1990–1999. *Central East European Dermatovenerological association (CEEDVA)*. Bulletin 2, 29 September 2000:10–14.
4 **Bennett ML**, Lynn AW, Klein LE, *et al*. Congenital syphilis: subtle presentation of fulminant disease. *J Am Acad Dermatol* 1997;**36**:351–5.
5 **Lyon DJ**. Congenital syphilis: when the medium fails to transmit the message. *Med J Aust* 1994;**160**:94–5.
6 **Tchoudomirova K**, Domeika M, Mårdh P-A. Demographic data on prostitutes from Bulgaria-a recruitment country for international (migratory) prostitutes. *Int J STD AIDS* 1997;**8**:187–91.

Accepted for publication 7 March 2002

Condom access does not ensure condom use: you've got to be putting me on

Approximately 15 million incident cases of sexually transmitted infections (STIs) occur in the United States each year.[1] These figures are troubling given the availability of primary prevention measures that sexually active people can use to avoid unprotected intercourse, including latex condoms.[2] Although considerable attention has focused on making condoms widely available, surprisingly little research[3 4] has examined whether condom availability is sufficient to ensure condom use.

We recruited a convenience sample of 98 male students through advertisements posted on two Georgia university campuses to evaluate sexual risk taking behaviour. Men were required to be aged 18–29 years, full time students, and to have used condoms for ⩾5 episodes of vaginal intercourse. After providing written informed consent, eligible men participated in a standardised interview about their experiences with condoms. The study was approved by the institutional review board of Emory University.

The 98 respondents averaged 22 years of age (SD 3). Sixty four (65%) were white, 27 (28%) were African-American, five (5%) were Asian American, and two (2%) were of mixed race. Men reported a mean of 18 lifetime sex partners (median 8 partners, range 1–150); most (96%) reported having vaginal intercourse during the previous year. Eighty five men (87%) used condoms because of concern about acquiring STIs; of these, most men were also concerned about pregnancy.

However, 73 men (74%) reported having vaginal sex without a condom when they "felt one should have been used" to protect against pregnancy and/or infection (median lifetime number of times without condom 8; range 1–450). Among men acknowledging unsafe sex, 42 (58%) admitted ever having unprotected intercourse despite ready access to condoms "within the same room" (median 5 times; range 1–300). Overall, condoms, although readily accessible, were not used in more than one third (37%) of lifetime acts of intercourse where risk of pregnancy or infection was perceived (832 of 2254 acts). Reasons for men's most recent failure to use condoms, despite accessibility, included unwillingness to interrupt foreplay (48%), fear of loss of sensation or erection (17%), and inebriation (17%).

Among all 98 participants, 58 men (59%) also reported occasions in which they intended to use a condom, only to find that they did not have a condom with them. At the most recent occasion when condoms were not available, 34 men (58%) chose to have unprotected intercourse. The remaining 24 men (42%) elected to abstain from intercourse and instead participated in non-penetrative sexual activities posing less risk for STI acquisition, or waited until a condom could be obtained.

Despite the small size and self selected nature of our population, these findings point to formidable barriers to "safer sex," at least in this heterosexual setting. Condom availability did not ensure condom use, even when condoms were needed. Similarly, the lack of availability of condoms did not deter most men from having intercourse. Avoiding sexual intercourse with an infected partner is the most effective way to prevent STIs.[2] However, for sexually active people, condoms can only reduce the risk of infection when they are both readily available and actually put on.[5 6]

Acknowledgement

Support for this work was provided in part with funds from the Society of the Scientific Study of Sexuality.

IRB approval: obtained from Emory University, October, 1993.

Conflict of interest: Neither author has a conflict of interest regarding publication of this work due to financial involvements or specific affiliations. All financial and material support for this research and work are clearly identified in the manuscript.

Contributors

Both authors have made substantial contributions to the intellectual content of the paper. LW was responsible for the conception and design of the study, locating funding for the study, acquisition of study data, data analysis and interpretation, and drafting and revision of the research letter; MS was involved with the conception and design of the analysis and interpretation and drafting and revision of the research letter.

L Warner
Centers for Disease Control and Prevention, Atlanta, GA, USA

M J Steiner
Family Health International, PO Box 13950, Research Triangle Park, NC 27709, USA

Correspondence to: Lee Warner, Centers for Disease Control and Prevention, Division of HIV/AIDS Prevention, Prevention Services Research Branch, 1600 Clifton Road NE, Mailstop E-46, Atlanta, GA 30333, USA; dlw7@cdc.gov

References

1 **Cates W Jr**, ASHA Panel. Estimates of the incidence and prevalence of sexually transmitted diseases in the United States. *Sex Transm Dis* 1999;**26(suppl 4)**:S2–7.
2 **Centers for Disease Control and Prevention**. Sexually transmitted diseases treatment guidelines 2002. *MMWR* 2002;**51**:(No RR-6).
3 **Schuster MA**, Bell RM, Berry SH, *et al*. Students' acquisition and use of school condoms in a high school condom availability program. *Pediatrics* 1997;**100**:689–94.
4 **Kirby D**, Brener ND, Peterfreund N, *et al*. The impact of condom distribution in Seattle schools on sexual behavior and condom use. *Am J Public Health* 1999;**89**:182–7.
5 **Warner L**, Clay-Warner J, Boles J, *et al*. Assessing correct condom use: implications for evaluating condom use effectiveness. *Sex Transm Dis* 1998;**25**:273–7.
6 **Steiner MJ**, Cates W, Warner L. The real problem with male condoms is nonuse. *Sex Transm Dis* 1999;**26**:459–62.

Accepted for publication 7 March 2002

Resolution of the recent performance problem of Abbott LCx *Chlamydia trachomatis* assay. Issues of repeat testing for confirmation of chlamydial infection

In February 2001, Abbott Laboratories issued a device correction notice to users of their LCx *Chlamydia trachomatis* assay suggesting that initially reactive ligase chain reaction (LCR) tests should be repeated on the same sample to validate the test result. A recent alert (December 2001) from the Medical Devices Agency (MDA, DA2001(09)) indicates that the device correction is still in force and points out the resource implications where retesting is required. We offer some data on LCR performance characteristics during this period and before.